[usegraphicx]mn2e

[Circumstellar discs in the η Cha cluster] Infrared study of the η Chamaeleontis cluster and the longevity of circumstellar discs [A. R. Lyo et al.]

A-Ran Lyo,[1]E-mail: arl@ph.adfa.edu.au (ARL); wal@ph.adfa.edu.au (WAL); eem@as.arizona.edu (EEM); edf@astro.psu.edu (EDF); ecsung@mso.anu.edu.au (ECS); lcrause@artemisia.ast.uct.ac.z (LAC) Warrick A. Lawson,[1⋆] Eric E. Mamajek,[2⋆] Eric D. Feigelson,[3⋆] Eon-Chang Sung[4,5⋆] and Lisa A. Crause[6⋆]

document

Accepted ..... Received .....

firstpage–lastpage 2002

firstpage

abstract We have analyzed *JHKL observations of the stellar population of the* ≈ 9 *Myr-old* η *Chamaeleontis cluster. Using infrared (IR) colour-colour and colour-excess diagrams, we find the fraction of stellar systems with near-IR excess emission is* 0.60 ± 0.13 *(*2σ*). This results implies considerably longer disc lifetimes than found in some recent studies of other young stellar clusters. For the classical T Tauri (CTT) and weak-lined T Tauri (WTT) star population, we also find a strong correlation between the IR excess and H*α *emission. The IR excesses of these stars indicate a wide range of star-disc activity; from a CTT star showing high levels of accretion, to CTT – WTT transition objects with evidence for some on-going accretion, and WTT stars with weak or absent IR excesses. Of the 15 known cluster members, 4 stars with IR excesses* $\Delta(K-L) > 0.4$ *mag are likely experiencing on-going accretion owing to strong or variable optical emission. The resulting accretion fraction (*0.27 ± 0.13*;* 2σ*) shows that the accretion phase, in addition to the discs themselves, can endure for at least* ~ 10 *Myr.*